

Amendments To The Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A process for the conversion of one or more unsaturated hydrocarbons to one or more oxidation products which process comprises reacting one or more unsaturated hydrocarbons in a reaction mixture under oxidation conditions in the presence of an oxidant, a heterogeneous catalyst and a solvent characterized in that the catalyst comprises a Group IVB, VB or VIB metal and that carbon dioxide is present in the reaction mixture under supercritical conditions.
2. (Currently Amended) ~~A process as claimed in~~ The process of claim 1 wherein the catalyst is a metal molecular sieve.
3. (Currently Amended) ~~A process as claimed in~~ The process of claim 1 ~~or claim 2~~ wherein the metal is a Group IVB metal.
4. (Currently Amended) ~~A process as claimed in~~ The process of claim 3 wherein the metal is titanium.
5. (Currently Amended) ~~A process as claimed in any one of claims 1 to 4~~ The process of claim 1 wherein the solvent is methanol.
6. (Currently Amended) ~~A process as claimed in any of the preceding claims~~ The process of claim 1 wherein the oxidant is hydrogen peroxide.

7. (Currently Amended) ~~A process as claimed in any one of the preceding claims~~
The process of claim 1 wherein the unsaturated hydrocarbon is an olefin.

8. (Currently Amended) ~~A process as claimed in any of the preceding claims wherein the carbon dioxide is present under supercritical conditions~~
The process of claim 7 wherein the carbon dioxide constitutes more than 50% by weight of the solvent used in the reaction mixture.

9. (Currently Amended) ~~A process as claimed in any of the preceding claims~~
The process of claim 1 wherein the oxidation product is one or more epoxides.

10. (Withdrawn-Currently Amended) ~~A process as claimed in any of claims 1 to 8~~
The process of claim 1 wherein the oxidation product is one or more aldehydes, ketones or acids.

11. (Withdrawn-Currently Amended) ~~A process as claimed in~~
The process of claim 9 comprising an additional step wherein the epoxide is converted to one or more acids or alcohols.

12. (Withdrawn Currently Amended) ~~A process as claimed in~~
The process of claim 11 wherein the one or more acids or alcohols are linear acids and linear alcohols.

13. (Currently Amended) ~~A process as claimed in any of the preceding claims~~
The process of claim 1 wherein the ratio of solvent to unsaturated hydrocarbon is less than 8:1.

14. (Currently Amended) ~~A process as claimed in~~
The process of claim 13 wherein the ratio is 1:1 or less.

15. (Currently Amended) ~~A process as claimed in any of the preceding claims~~ The process of claim 1 wherein the reaction mixture comprises at least 1% by weight of carbon dioxide.

16. (Currently Amended) ~~A process as claimed in~~ The process of claim 15 wherein the reaction mixture comprises at least 25% by weight of carbon dioxide.

17. (Currently Amended) ~~A process as claimed in any of the preceding claims~~ The process of claim 1 wherein the carbon dioxide constitutes more than 50% by weight of the solvent used in the reaction mixture.

18. (Currently Amended) ~~A process according to any one of claims 4 to 17~~ The process of claim 1 wherein the catalyst is selected from one of the following: TS-1, TS-2, TS-3, titanium zeolite beta, TS-48, titanium mordenite and titanium silicalite.

19. (Currently Amended) ~~A process according to any of claims 1 to 18~~ The process of claim 1 wherein the reaction residence time is at least 20% less than that required to achieve 50% conversion without the presence of carbon dioxide.

20. (Currently Amended) ~~A process according to~~ The process of claim 19 wherein the reaction residence time is at least 50% less.

21. (Currently Amended) ~~A process according to claim 20 or claim 21~~ The process of claim 20 wherein the conversion is 90%.

22. (Currently Amended) ~~A process as claimed in any of the preceding claims~~ The process of claim 1 wherein the reaction pressure is between 1 and 700 atmospheres.

23. (Currently Amended) ~~A process as claimed in any of the preceding claims~~ The process of claim 1 wherein the ~~epoxidation~~ reaction temperature is from 0°C to 100°C.

24. (Currently Amended) ~~A process as claimed in~~ The process of claim 23 wherein the reaction temperature is within the range 40°C to 80°C.

25. (Currently Amended) ~~A process as claimed in any of the preceding claims~~ The process of claim 1 wherein the reaction residence time is within the range of 10 minutes to 48 hours.

26. (New) A process for the conversion of one or more unsaturated hydrocarbons to one or more epoxides which process comprises reacting one or more unsaturated hydrocarbons in a reaction mixture under oxidation conditions in the presence of an oxidant, a heterogeneous catalyst and a solvent characterized in that the catalyst comprises a Group IVB, VB or VIB metal and that carbon dioxide is present in the reaction mixture under supercritical conditions.

27. (New) The process of claim 26 wherein the catalyst is a molecular sieve containing a Group IVB metal.

28. (New) The process of claim 27 wherein the metal is a Group IVB metal is titanium.

29. (New) The process of claim 28 wherein the titanium is substituted for a portion of the silicon atoms in the lattice frame work of the molecular sieve.

30. (New) The process of claim 26 wherein the solvent is methanol.

31. (New) The process of claim 26 wherein the oxidant is hydrogen peroxide.
32. (New) The process of claim 26 wherein the unsaturated hydrocarbon is an olefin.
33. (New) The process of claim 26 wherein the ratio of solvent to unsaturated hydrocarbon is less than 8:1.
34. (New) The process of claim 26 wherein the reaction mixture comprises at least 1% by weight of carbon dioxide.
35. (New) The process of claim 26 wherein the reaction mixture comprises at least 25% by weight of carbon dioxide.
36. (New) The process of claim 26 wherein the heterogeneous catalyst is selected from the group consisting of: TS-1, TS-2, TS-3, titanium zeolite beta, TS-48, titanium mordenite and titanium silicalite.
37. (New) The process of claim 26 wherein the reaction residence time is at least 20% less than that required to achieve 50% conversion without the presence of carbon dioxide in the supercritical state.
38. (New) The process of claim 26 wherein the reaction is run at a pressure between 1 and 700 atmospheres and / or at a temperature from 0°C to 100°C.
39. (New) The process of claim 26 wherein the reaction has a residence time of from 10 minutes to 48 hours.

40. (Withdrawn-New) The process of claim 26 comprising an additional step wherein the epoxide is converted to one or more acids or alcohols.

41. (Withdrawn-New) The process of claim 40 wherein the one or more acids or alcohols are linear acids and linear alcohols.

42. (New) A process for the conversion of one or more unsaturated olefins to one or more epoxides comprising reacting one or more unsaturated olefins in a reaction mixture under oxidation conditions comprising a pressure of between 1 and 700 atmospheres, a temperature from 1 to 100°C, and a residence time of 10 minutes to 48 hours in the presence of an oxidant, a heterogeneous catalyst comprising a molecular sieve where titanium is substituted for a portion of the silicon atoms in the lattice frame work of the molecular sieve, and a solvent, wherein carbon dioxide is present in the reaction mixture under supercritical conditions and the reaction mixture comprises at least 1% by weight of carbon dioxide.

43. (New) The process of claim 42 wherein the heterogeneous catalyst is selected from the group consisting of: TS-1, TS-2, TS-3, titanium zeolite beta, TS-48, titanium mordenite and titanium silicalite.

44. (New) The process of claim 42 wherein the solvent is methanol and/or the oxidant is hydrogen peroxide.

45. (New) The process of claim 42 wherein the olefin is selected from the group consisting of ethylene, propylene, the butenes, butadiene, the pentenes, isoprene, hexenes, heptenes, octenes, diisobutylene, nonenes, the trimers and tetramers of propylene, cyclopentene, cyclohexene, cycloheptene, cyclooctene, cyclooctadiene,

dicyclopentadiene, methylenecyclopropane, methylenecyclopentane,
methylenecyclohexane, vinylcyclohexane, and vinyl cyclohexene.

46. (New) The process of claim 42 wherein the olefin is selected from the group consisting of 1-octene, propylene and cyclopentene.

47. (New) The process of claim 42 where the olefin is a mixture of olefins.

48. (New) The process of claim 42 where the olefin is a raffinate mixture which comprises mixed butenes; 1-butene, cis-2butene, trans-2-butene and iso-butene.